APPENDIX B
Submitted Written Public Comments*

(Additional Written Public Comments from the April 12, 2004 Meeting may be found on the 911 Environmental Action Website: http://911ea.org)

***THE FOLLOWING PUBLIC COMMENTS WERE RECEIVED AT THE EXPERT TECHNICAL PANEL REVIEW MEETING #1. NOTE, THE MEETING IS NOT A PUBLIC HEARING TO HEAR TESTIMONY, BUT RATHER A TECHNICAL MEETING FOR EXPERT PANEL MEMBER DISCUSSIONS WITH TIME SET ASIDE TO HEAR COMMENTS FROM THE PUBLIC ON DISCUSSION TOPICS.**

STATEMENT OF ROBERT GULACK, UNION STEWARD, U.S. SECURITIES & EXCHANGE COMMISSION, BEFORE THE EPA TECHNICAL PANEL

FOR IMMEDIATE RELEASE
April 12, 2004

FOR MORE INFORMATION, CONTACT:
Robert Gulack, (201) 794-9322

As this panel may recall, my name is Robert Gulack and I am a senior attorney at the United States Securities & Exchange Commission. I am here today as a union steward representing the bargaining unit at the SEC, which has suffered from more than two years of illness because of the EPA's continuing refusal to fulfill its legal responsibilities and test and decontaminate the office buildings of New York City. I have personally suffered along with my colleagues, enduring bronchitis, pneumonia, and permanent lung damage, as has been verified by the U.S. Department of Labor's federal workers' compensation program.

Never before in the bitter history of human folly has a United States federal agency so deliberately, so consistently, and so continuously aided and abetted the murderous enemies of the United States of America. Never before have so few federal bureaucrats done so much harm to so many innocent Americans. If Dr. Gilman and the EPA had been in charge of our national response to Pearl Harbor, it would now be June 1944, and Dr. Gilman would be telling you that, no, he never bothered to count the number of ships sunk by the Japanese attack, but that there was no point in going to Oahu and counting the wreckage on the bottom, because, instead, he had gone to North Carolina, built a scale model of Hawaii, and blown it up.

If the EPA would only agree to do the testing, they would find, as the testing paid for by my union has found, that the office buildings and residences of New York City are still choking with lethal debris created by Osama bin Laden and left in place by bin Laden's accomplices in our federal, state, and city governments. If the EPA would only agree to do the testing, they would determine that a chemical attack is still in progress against hundreds of thousands of innocent New Yorkers. The EPA continues to refuse to do this testing, in spite of the report of their own Inspector General, because their first commitment is not to securing the public safety, but to covering up their past misconduct, at least until Election Day. The EPA seeks closure on testing issues before this panel is fully briefed on the health emergencies currently surfacing in New York City.

During the last meeting of this panel, Dr. Gilman here told the press that he was very interested in collating all environmental data so far collected by landlords. Why has it taken Dr. Gilman two and a half years to get around to expressing a vague interest in this data? Why wasn't it collated two years ago? Why doesn't this panel immediately call on the EPA to collect this data, and, when it is found to be fragmentary and inadequate, as it will be, why doesn't this panel then call on the EPA to test the office buildings, HVAC systems, and residences of New York, as it should have tested them two years ago?

In the last meeting of this panel, it was admitted that there has never been any comprehensive and authoritative oversight of the clean-up efforts by New York City's commercial landlords. Why doesn't this panel immediately call on the EPA to provide that oversight – to require all commercial landlords to perform comprehensive testing of their buildings, using electron microscopes?

The people of New York City cannot be asked to accept an increased cancer rate of 1 in 10,000 – per contaminant. In a city of this size, that amounts to handing Osama bin Laden at least another thousand victims. People can move away from Love Canal, if they wish, but Manhattan is going to remain a population center. For that reason, we must make it a safe area for large numbers of people to live in.

The people of New York City cannot be asked to accept that the average surface concentration of asbestos in southern Manhattan has now been increased from 2,000 structures of asbestos per square centimeter to 200,000 or two million. I will not accept that al-Qa'ida will remain in control of the amount of asbestos we are exposed to. It may be difficult to prove, at this point, how dangerous it is to increase the surface levels of asbestos from 2,000 to 10,000 or 20,000, but, for that very reason, we should err on the side of safety, returning asbestos contamination back to the level it was at before the planes hit.

In my own building, air tests would often appear safe while surface tests were mounting back up to astronomical numbers. Then asbestos would, once more, appear in the air. If this panel allows high amounts of asbestos to remain on the surfaces of Manhattan, that asbestos will one day be kicked back into the air and inhaled by our innocent citizens.

The people of New York will not be brushed off with the excuse that the EPA cannot afford to test New York. We were promised a complete clean up. We have not even gotten testing. The people of New York will not be brushed off with the phony line that Senator Clinton wants this panel to focus on re-testing apartments. Senator Clinton – as a representative of this state – has repeatedly stated she wants the EPA Inspector General's recommendations implemented. At the press conference where this panel was announced, Clinton urged this panel to call for testing of workplaces. We were promised testing. Our representatives have called for testing. The EPA Inspector General called for testing. Why can't we have testing? What gives the EPA the right to stand between the people of New York and the testing they so desperately need?

Dr. Gilman, do we have to parade the innocent tortured children of Chinatown in here, with their pitiful blistered lungs, before you will acquire a conscience, and seek to begin to remedy the enormous harm you have done? Dr. Gilman, do we have to parade the innocent tortured students of Stuyvesant High School in here, gasping and wheezing, before you will acquire a conscience, and start to remedy the harm you have done?

In the words of Jefferson, you have abdicated government here, declaring us out of your protection, and allowing foreign mercenaries to continue burning our towns. In the bare caverns of Afghanistan, our enemies are rejoicing today that the EPA cover-up is proceeding, and that New York City is continuing to suffer more and more harm from the attacks of September 11th. In the caverns of Afghanistan, our enemies are telling each other that as long as the Bush Administration is our ally, all we have to do is sit back and allow the federal government of the United States to continue to assassinate the innocent children of that country.

I am here today to plead for the public safety. I am here to plead for responsible government under law. The White House and the EPA stand for the continuing reckless endangerment of innocent children, residents, and workers. The White House and the EPA stand for a state of anarchy, in which faceless federal bureaucrats take it upon themselves to decide what laws they will choose to obey and what laws they will choose to disregard. All we are asking is that the EPA immediately test the offices, HVAC systems, residences, schools, and firehouses of New York in the same thorough and responsible manner that the EPA tested their own offices. I ask this panel to call on the EPA to begin this testing on an immediate basis.

Testimony of the Association of Legal Aid Attorneys, UAW Local 2325

Presented before:
Environmental Protection Agency
2nd Meeting of the World Trade Center Expert
Technical Review Panel

Presented by:
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April 12, 2004

On behalf of the Association of Legal Aid Attorneys (ALAA), UAW Local 2325, I welcome the opportunity to give testimony before the Environmental Protection Agency (EPA) 2nd Meeting of the World Trade Center Expert Technical Review Panel.

Founded in 1876, the Legal Aid Society (LAS) is the oldest and largest provider of legal services in the United States. The ALAA is comprised of over 800 attorneys who provide legal services to indigent clients in the criminal, civil, and juvenile rights areas through offices in all five boroughs of New York City. As attorneys, we annually represent some 300,000 individual client cases.

Prior to September 11, 2001, the headquarters of the LAS was housed at 90 Church Street, located just North (across Vesey Street) of the former Five World Trade Center building and just to the East (across Broadway) of the former Seven World Trade Center building. The Site was the workspace for 500 attorneys and support staff, of the approximately 2,000 employees, of the LAS. The Society occupied the entire top three floors (13-15) of the building. When Legal Aid entered into a fifteen-year lease in 1997, the class-A office space was gut renovated, from concrete slab-to-slab, to the Society's specifications with strict requirements for environmental cleanliness.

The 90 Church Street building was severely impacted by the destruction of the World Trade Center (WTC) complex. The collapse of each of the WTC towers and the related structures immediately adjacent to our Site created a contaminant-laden debris and dust cloud that caused physical damage and projected hazardous materials into our workspace, as well as the entire building. An engine from one of the airliners that collided with one of the WTC towers pierced through the roof of our Site in the southwest quadrant of the 15th floor of the building. In addition, the petroleum-fueled collapse of WTC 7 directly across East Broadway from the Site propelled flaming debris

into 90 Church Street causing fires on floors 5 and 6 of the building, and produced a third major contaminant incursion into the Site. In reaction to the fires, the building's fire-suppression system discharged sprinkler water throughout the impacted areas, and continued to discharge water until the building tanks were empty. Windows were shattered on the West and South facades of our workspace; debris and dust were projected through these windows and throughout the Site by the force of the collapse. Elevator shafts, stairwells, the HVAC system, and other airshafts within the building provided additional pathways for airborne contaminants to travel from floor to floor.

In the aftermath of September 11th, the ALAA, its employer the LAS, along with all of the other similarly situated victims in Lower Manhattan had no conception of how to handle the cleanup. The emergency response action of the EPA was delayed and ineffective in providing cleanup protocols. Irrespective of whether or not current Congressional hearings reveal if the Government had sufficient forewarning of the September 11th terrorist attack; the EPA was the most appropriate governmental agency to create immediate guidelines to be disseminated to victims who had to deal with contaminated workspace and residential space. Thus, left with no governmental guidance or assistance, the ALAA and the LAS were forced, with no financial ability to do so, to retain the services of environmental consultants to evaluate our workspace.

Our Site was contaminated by a variety of compounds that originated from the WTC collapse. Contaminants were detected on carpeting, furnishings, within the ceiling, within the HVAC ductwork, and within partition walls. Because the HVAC system serving our workspace was shut down on September 11th, humidity levels within the Site were uncontrolled and allowed for the growth of mold and bacteria. Moreover, the

ALAA learned the specific configuration of our workspace, such as the elevation of the suspended ceilings, the configuration of the partition walls and HVAC system all contributed to the thorough contamination of our Site.

Representative sampling of bulk materials revealed the presence of asbestos, heavy metals, dioxins, polycyclic aromatic hydrocarbons (PAHs), lead dust, mercury, polychlorinated biphenyls (PCBs), fiberglass dust, fungi and bacteria. Similar contamination was reported throughout every floor of 90 Church Street, including office space, common space, mechanical space, interstitial spaces, and sub-grade space.

In some areas of our Site, the dust layer contained greater than 1% asbestos. Although the ALAA was informed that published standards for acceptable levels of heavy metals within commercial office space have not been developed because the presence of these contaminants is neither normal nor an acceptable condition, we learned the exposure to many of the metals detected within our workspace, such as nickel, cadmium, chromium, and mercury have been classified by the EPA as human carcinogens. We also learned that any presence of dioxins, PAHs, and PCBs in occupied space is unacceptable. Lead dust levels throughout the Site exceeded published guidelines for abatement work area clearance.

Because of the great concern for the health and welfare of certain sensitive subpopulations of our workers, namely young pregnant women and immunocompromised individuals, as well as our clients, including mothers with young children who can easily ingest contaminated dust, the ALAA encouraged the LAS to engage the services of an expert firm to perform a human health risk assessment to evaluate the potential impacts associated with the existing dust conditions in the Site.

The result of this evaluation indicated the dust conditions in the Site posed a significant health hazard to attorneys and support staff, as well as our clients. The risk estimates were calculated for three worker scenarios: an office worker, a pregnant office worker, and an immunocompromised worker, as well as a child scenario. The cancer risks for each of the worker scenarios were 10 to 20 times higher than the EPA's cancer risk limit. The cancer risk for the child scenario was four fold above the EPA's cancer limit.

Upon the conclusion of all testing and evaluations, all experts retained by the LAS and the ALAA concurred and recommended a gut rehabilitation project be conducted throughout the Site. A gut rehabilitation was also the stated response action planned by Boston Properties, the building property manager.

While other victims of contaminated space in the WTC area may not have been as fortunate, the LAS was insured. However, insurance companies, in the aggregate, are refusing to settle documented property claims submitted by victims of September 11th. The resolve of the insurance industry to arbitrarily and capriciously dismiss claims has been strengthened by the lack of uniformed cleaning protocols that should have been immediately promulgated by the EPA, as well as an early misleading announcement by the EPA declaring the WTC area safe.

To date, the LAS has not reoccupied its leased space at 90 Church Street. After two and a half years of being displaced, the Society only recently relocated its headquarters to 199 Water Street, on March 26, 2004. Although the LAS has the ability to obtain *pro bono* representation from the best insurance and real estate law firms within New York City, it has yet to settle its outstanding property claim with its insurance

carrier. The Society has been in protracted negotiations since September 11th that may culminate in extensive litigation.

As advocates for individuals who need assistance in navigating the complex landscape of the legal system and governmental bureaucracies, the ALAA strongly encourages this Panel to support and to ensure the environmental protection of those in need are met.

Testimony to WTC Air Quality Technical Expert Panel
4/12/04
Caroline Martin
Board President
Collect Pond House
366 Broadway

I would like to tell you about the 'whole building' clean up that we had at my building at 366 Broadway.

The protocols called for a pre-cleaning inspection by EPA and the company who would do the cleaning. On February26 2003 three people came to the building for this pre cleaning inspection:

Robert Fitzpatrick from EPA
Mark Nakhumovich from ATC and
Andrew Konstandt ASCS

I went with them to the roof where they were to inspect the ventilation shafts for our exhaust vents. As they were removing the mushroom top of the first shaft, I asked what they were looking for and was told that they were looking for WTC dust.

Once the shaft became visible, I was excited to see that there was quite a lot of dust in the shaft. Oh look, I said, dust. That is not WTC dust, I was told. A camera was passed down the shaft and we watched on a screen what the camera was seeing – lots of dust. However, this was not WTC dust. I asked how they knew it was not WTC dust. Mr. Fitzpatrick said he knew as he had worked on the pile. WTC dust he declared was brown/grey not the grey dust that we had at 366 Broadway.

By the time we got to the third mushroom (we have 4) a resident who has roof space came out to ask me what was going on. I asked her if there had been WTC dust on the roof after the WTC collapse. She said there had. She told me the dust was grey! This information cut no ice with the team inspecting the vents. They also took a brief look at the elevator shafts. Mr. Fitzpatrick ran his finger over some dust in the shaft and declared it not WTC dust, as when he rubbed it between his fingers, he felt no fibers.

I received a report saying the vents were clear of WTC dust. This meant that neither the vents nor the elevator shafts would be cleaned.

Trio came to clean the common areas on March 7th. I asked the manager on site if the workers should not be wearing masks to do this work. He declared that the workers had been informed about masks, but since he knew what asbestos looked like, and had not seen any, they did not need masks. I was interested to know how he would identify asbestos in our grey carpets, but he was not interested in discussing this.

My only science education is high school biology. You are a panel of experts. Are you confident based on these 'inspections' that there is no WTC dust at 366 Broadway?

Thank you.

Statement of Marilena Christodoulou
President, Stuyvesant High School Parents' Association, 2000-2002
Member, 9/11 Environmental Action
Before the
World Trade Center Technical Expert Panel
April 12, 2004

Stuyvesant High School is located four blocks north of the World Trade Center (WTC). On September 11, 2001, the 3,000 students and 200 staff members were evacuated in the middle of a cloud of toxic dust and debris as the second tower was collapsing.

The Board of Education (BOE) reopened the school on October 9. We sent our children back to school in good faith based on specific assurances from the BOE and the NYC Department of Health (DOH) that the inside of the building was completely clean, including all aspects of its heating and ventilation systems, and that the air quality immediately outside of Stuyvesant was at safe acceptable levels for children.

Unfortunately, neither of these representations proved to be true. The various Government agencies in charge of protecting the environment and public health (including the EPA and DOH) completely failed to take the necessary measures to protect our children, and continuously misrepresented the situation to us. Although field representatives of the EPA were originally at Stuyvesant during the weeks leading to the school's reopening, they provided no assistance of any sort to our community, and we were left to our own devices to battle with the BOE and other Government agencies.

The BOE conducted an asbestos abatement of the school prior to reoccupancy, but the ventilation system was not cleaned, filtration was not adequately upgraded, and carpeting was not properly cleaned or replaced. Only under the threat of imminent litigation, did the BOE finally clean the ventilation system in the summer of 2002 and replaced the carpets this past December 2003, 26 months after our children's return to school post-9/11.

A major problem was the location of the waste transfer barge operation right next to Stuyvesant, by the school's ventilation intakes, on Pier 25. This was the main debris removal operation from Ground Zero. For 8 months, several hundred trucks a day carried pulverized debris from Ground Zero, with whatever toxic contaminants were in the debris, to the barges. Diesel emissions from the trucks and cranes at the barges were another source of contaminants.

Our experience at Stuyvesant is of the utmost importance in your consideration of several key issues in the environmental cleanup of Lower Manhattan:

1. **The arbitrary exclusion of schools and workplaces from the cleanup.** There are no legal or scientific reasons to exclude schools or workplaces. All buildings should be included.
2. **The evaluation of the incidence of recontamination of buildings already cleaned by the EPA or others**. Stuyvesant was recontaminated.
3. **The appropriateness of the use of asbestos as a surrogate for evaluating the risk from other WTC contaminants.** Asbestos is not a sufficient surrogate.

4. **Health monitoring and identification of unmet public health needs.** To-date, health monitoring has been grossly inadequate. The health needs of affected children and students have been ignored.

After the original asbestos abatement at Stuyvesant in October 2001, daily environmental testing performed by the BOE demonstrated recontamination primarily through the ventilation systems. On more than 50% of the days from October 9, 2001, when our children returned to school, to February 1, 2002, and as late as May 6, 2002, measurements of respirable particulate matter (PM 2.5) inside the school exceeded EPA guidelines for children. Levels of lead dust in excess of regulatory limits were found inside Stuyvesant on several occasions in December 2001 and January and February 2002.

On several occasions, the EPA notified the PA that it had monitored high levels of certain contaminants in outdoor air at its monitoring station, between the school and the barge, in excess of EPA regulatory limits. These contaminants included asbestos, tetrachloroethane, and isocyanate. Unfortunately, the EPA had not been monitoring the latter contaminants on a regular basis nor was it monitoring and disclosing the full array of possible contaminants. Consequently, we have no way of knowing if these or other contaminants are present inside the school.

In the Spring of 2002, under threat of litigation, the BOE tested inside the school's ventilation systems and found high levels of lead. The school had to be shut down during the summer of 2002 and a lead abatement of the mechanical ventilation systems was done. In July 2002, despite the original asbestos abatement 9 months earlier, asbestos in excess of EPA's regulatory levels was found in the carpets and seats in the school's auditorium. All test results have been provided to the EPA.

The above clearly demonstrates the recontamination of the school, primarily through its ventilation systems, and the inadequacy of asbestos as a surrogate measure for other WTC contaminants.

As to health issues, since the return to school on October 9, 2001, a number of students and faculty reported and exhibited clinically diagnosable symptoms of illness (unusual rashes, nosebleeds, coughing attacks, and chronic sinus and respiratory problems, including new onset asthma and chemical bronchitis).

After the Teacher's Union filed a grievance over post-September 11 environmental conditions at the school, the National Institute of Occupational Safety and Health (NIOSH), a branch of the Centers for Disease Control, conducted an investigation of environmental conditions and health effects among the staff at Stuyvesant (and other Lower Manhattan locations). NIOSH's preliminary findings were that 50-60% of the staff reported respiratory symptoms after 9/11, a majority of which were new onset symptoms. 33% of the staff had continuing symptoms months later. However, NIOSH has no jurisdiction to conduct an evaluation of our children and neither the BOE nor the DOH conducted an epidemiological study of the Stuyvesant students. An informal survey of parents by the PA found several hundred children with new or exacerbated respiratory symptoms several months after September 11. Of the 430 respondents, about two-thirds indicated new incidence of illness since the return to school in October 2001.

It should also be noted that the NIOSH study was never finalized and no actions were taken as a result of the preliminary study.

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April 12,2004

Dr. Joan Greenbaum
PSC-CUNY Local 2334 AFT

Post Sept 11th Clean up of workplaces in lower Manhattan—lack there of

My name is Joan Greenbaum and I am Co-Chair of Health and Safety for the Professional Staff Congress (PSC) of City University of New York (CUNY). We represent 15,000 workers at the City University. Borough of Manhattan Community College (BMCC) here on Chambers Street, is an important branch of City University, has over 2,500 employees and close to 20,000 students.

The administrators at BMCC were extremely helpful in evacuating the buildings on September 11th. Fiterman Hall, located right beside 7 World Trade Center, was severely damaged and remains closed. But despite continuing efforts on the part of BMCC and CUNY administration, serious clean-up and health problems remain for both Fiterman and the main campus that we are standing in. These problems stem from both financial constraints of the institution and from a lack of clarity from governmental agencies as to coordination of appropriate clean-up protocols--in short mixed messages and lack of funds. Let me explain by giving an example:

With the assistance of NYCOSH our local was part of a study conducted by the National Institute of Occupational Safety and Health (NIOSH). This study found that 7 months after September 11th, 30% of our members at BMCC experienced persistent nose/throat and eye irritation, with 28 % reporting on-going coughs and headaches. This study, a major undertaking through the Center for Disease Control, clearly reports that something is amiss in the workplace and that the health effects of Sept. 11th in lower Manhattan are significantly different than those of the population in general. We do know that our members continue to work and continue to experience problems. Here are a few of our current specific concerns:

In late June and early July 2002, a well-respected environmental testing firm found elevated lead concentrations in the air intakes and return ducts at BMCC. These lead levels were found despite the fact that the building was cleared for asbestos—the supposed proxy substance considered representative of other contaminants--two months after the disaster. While cleaning the ductwork is something our union has argued for since September 11th, it was not done until April 2003. The administration at BMCC argued that they did not have the funds, and that immediate action was not necessary given the absence of Federal, State and City guidelines or standards for lead in air ducts.

The tests reported however, that the levels immediately within and outside of the ductwork exceeded EPA guidelines commonly used for *residences*. EPA guidelines commonly used for residences allow for lead levels of up to 40 micrograms per square foot for floors. Outside air intake portals at BMCC registered as high as 4,000 micrograms per square foot; **one hundred times** the level allowable for residential floors. Doesn't it make sense that if lead is considered unsafe at floor level it should be considered unsafe where it enters the air supply? Why did it take a year and a half to get it removed? What other possible toxins rest within the walls and ducts of our workplaces?

Where did this lead come from? First and foremost there is extensive evidence that the destruction of the towers could have rained lead down on this and other buildings, since lead solder in computers is, among other sources, one of the contaminants from the destruction. Secondly, we all know that the barge-loading site for WTC debris, with its heavy trucks and equipment was directly outside the air intake vents of BMCC on West St. During the four months that these trucks idled in front of this school and Stuyvesant High School across West St., lead-level restrictions were rescinded during the emergency.

Do current employees and students and future generations need to suffer until the EPA along with State agencies get their acts together and recognize our continuing dilemma? We are committed to insuring that **workplaces,** including the ductwork of their extensive Heating and Air Condition systems (HVAC) are appropriately and professionally cleaned using the highest possible emerging standards for **all known contaminants.**

Borough of Manhattan Community College is severely overcrowded due to the loss of Fiterman Hall. There has been no insurance settlement nor help from Federal authorities to assist City University in securing the capital it needs to end the serious overcrowding in this building. This college operates from 7 in the morning until 11 at night, 7 days a week. This is New York City, and lots of people spend more time at work than at home. Isn't it time for the EPA to deliver a clear message **that workplace illness and indoor health hazards are not in the interest of public health.** If we are to seriously calculate possible future health costs, is it not better to protect the population here and now, rather than face the costs in the future?

At the very least we would expect the EPA to issue clear guidelines and regulations concerning indoor air quality for all workers in this city. In the terrifying event of any future disasters, the EPA should be ready with guidelines that, at the minimum, spell out the need for:

- Professional testing of all residence and workplace interiors including ductwork for all known contaminants, and as scientific evidence becomes available, the synergistic effect of combined contaminants;
- Guidelines for, and lists of professional cleaning crews who would clean surfaces immediately using proper protective equipment;
- Ongoing monitoring for indoor air quality that matches, at a minimum, criteria established for outside air and water.

Joan Greenbaum
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Wednesday, March 31, 2004 Testimony from Diane Lapson ,
Vice President, Independence Plaza Tenant Association
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RE: Testing of residential spaces

Independence Plaza North (IPN) is a lartge residential complex just north of Chambers Street. We were heavily impacted by the dusty cloud on 9/11/01. (see enclosed photo of how one of our buildings – 310 Greenwich St. was surrounded by dbris clouds.)

RECONTAMINATION:
We believe our Apartments have had a good chance of being recontaminated, because

1. All of The common spaces were not cleaned, tested and shown to be free of contaminants before the cleaning of individual apartments started.

For example: The community rooms, one at 310 and one at 80 N. Moore were not cleaned until July or August 2002 - AFTER residences were cleaned. Themanagement office and maintenance offices were not cleaned at all.

2. Tenants have discarded contaminated materials (rugs, boxes, books, etc.) and otherwise used compactor rooms, which had been shown to be contaminated by private, indpenedent testing, but were not cleaned by the EPA. It is clear contaminants could have been tracked back into the apartments.

3. All the streets in tribeca were covered with a heavy layer of dust for over 8 months, because of the barge waste-transfer operation at pier 25. Regular street traffic could have recontaminated apartments. Residents witnessed the Dept. of Sanitation trucks often using dry brushes -- instead of wet washing --to clean the streets

This obviously caused contaminants to spread even further; however even
crossing the streets caused contaminants to be picked up by shoes and clothing.

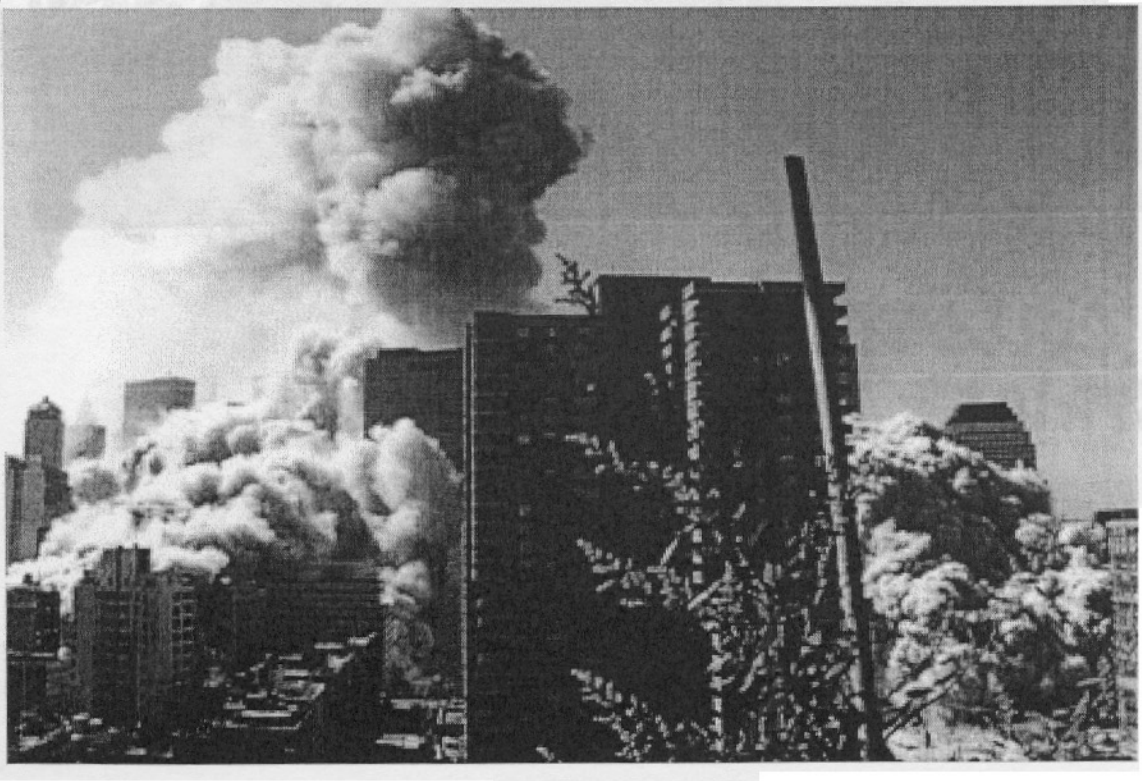
CONTAMINATION not REMOVED EVEN AFTER CLEANUP:
Some residents were told that AFTER the cleanup, their apartments still showed higher than acceptable levels of asbestos. This information was confidential so we are not privy to these results and do not know who was left without a final re-cleaning. However, in at least one apartment that we know of, the program ended without the tenants being re-cleaned.

TESTING OF CONTAMINENTS:
We have always felt, since we physically saw the pulverized debris surrounding IPN, that asbestos was never the only contaminant to be concerned about. The testing of some random apartments in lower Manhattan for other elements other than asbestos doesn't seem to be effective enough to reflect whether lead, dioxine, mercury, PBC's, etc. were part of IPN's
contamination issues. At the very least, we feel testing for other elements is critical - not only at IPN. We have no way of knowing how safe our apartments are.

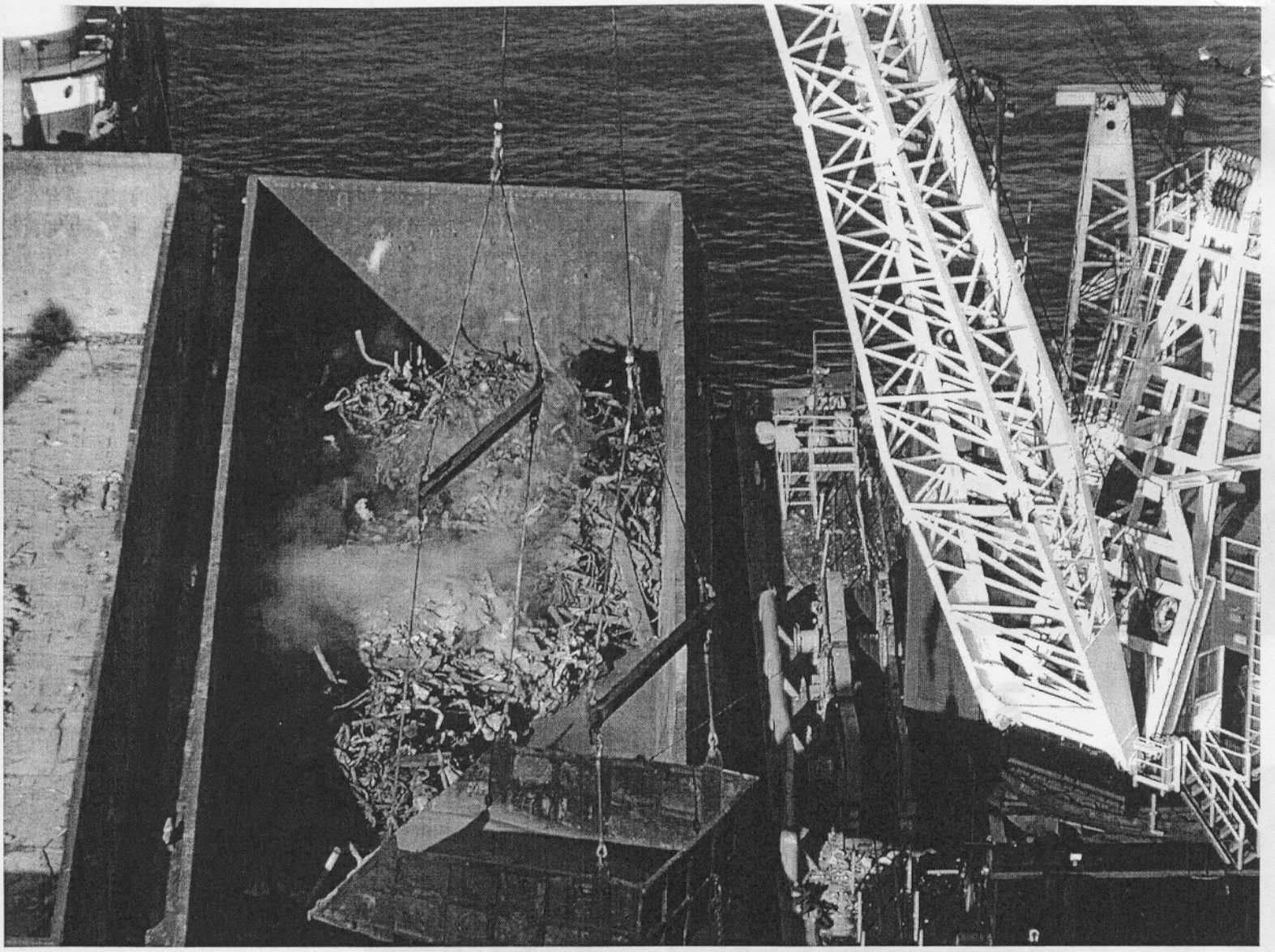
Summary and additional requests:

We would like ALL residences in Lower Manhattan (some 20,000) and in areas of Brooklyn impacted by the 9/11 dust cloud, whether or not they were cleaned by the EPA and whether or not their buildings have central HVAC systems, included in a program of comprehensive, respresentative testing. Additionally, we request an independent scientific entity such as the National Academy of Sciences, to OVERSEE an aggressive testing program and the resulting cleaning and retesting. (Testing to include air and wipe tests.)

310 GREENWHICH ST.



IPN ↑



DEBRIS COLLECTION
"DOWN-STAIRS" FROM IPN

Jenna Orkin 718-246-1577 jennakilt@aol.com

WTC EPA PANEL APRIL 12, 2004

Why is this environmental disaster different from all other environmental disasters? The word 'unprecedented' is used ad nauseam to describe it. But in crucial ways, the environmental consequences of 9/11 *do* have precedent and EPA has established protocols to clean up the contaminants that were released. Why are they not following them here? Why are they reinventing the wheel in the shape of a triangle? If this disaster was greater than its predecessors, all the *more* reason why state-of-the-art testing and cleanup should have been and still should be instituted ASAP. Instead EPA says on the one hand, "Poor us, this was unprecedented" and on the other, "But there's no problem."

In addressing the questions that EPA has put to you, the panel should also consider whether they are the best questions to be asking. For instance, concerning asbestos as surrogate, the panel should question the assumption that any one contaminant can serve as a surrogate for the hundreds that were released by the disaster and subsequent fires. Asbestos coated the first forty storeys of the North Tower. The World Trade Center also held 500,000 ~~of~~ fluorescent light bulbs each of which contained enough mercury to contaminate a quarter of a city block; fifty thousand computers each made with four to eight pounds of lead; smoke detectors which may have contained radioactive americium 241. (conversation with EPA analyst Heagh Kaufman)

"From September 23 - November 21 at Church and Dey dioxin was 10-170 pgTEM/m3, the highest levels ever recorded "

EPA Exposure and Human Health Evaluation of Airborne Pollution from the World Trade Center pp 76-77

Dioxin can adsorb onto the surface of fine particulate matter and EPA should not neglect this as well as very and ultrafine particulates in its consideration of contaminants of potential concern.

"Numerous PCB congeners... were detected at high concentrations. The Toxic Equivalency...is 151pg/L. In previous harbor work... the highest observed PCB TEQ was 0.002 pg/L." (EPA, Sept 20 report from Juan Gonzalez' Fallout.[1] p 73)

This means that EPA found PCBs which were 75,000 times the previous record.

Asbestos contributed c. 5000 tonnes to the total debris. (Sigrun Davidsdottir in the Guardian. Gonzalez gives a much lower figure.) There were 1.6 million tons of debris at Ground Zero alone, excluding the plume. So asbestos comprised less than one three hundredth of the total debris. What remains of the other 99.66% must also be cleaned up. And the decision of whether asbestos is an appropriate surrogate should not be left to a subpanel of industry representatives ~~and~~ asbestos experts. This panel should also consult experts in lead, particulate matter and other contaminants.

scientists who may be chosen without input from the public

1 Fallout, Juan Gonzalez

3/31/04

The EPA World Trade Center
Expert Technical Review Panel

Submitted by: Jimmy Willis
Assistant to the President TWU Local 100

On behalf of the leadership and members of Transport Workers Union Local 100 I would like to thank the members of the panel for the opportunity to present testimony with regards the future health needs of Ground Zero Recovery workers.

Beginning on the afternoon of 9/11/01 NYC Transit workers (members of TWU Local 100) began mobilizing to the Brooklyn waterfront. Once there, several thousand loaded all of NYC Transit's heavy equipment onto barges and sailed to Manhattan. Once there, they began the process of cutting through the steel surrounding Ground Zero in an effort to get to "the pile".

All of our "hard hats" responded – welders, heavy equipment operators, track workers etc…Additionally, over a thousand Transit Workers safely evacuated riders from the Stations, trains and busses in the area around the World Trade Center. Hundreds more volunteered in the "bucket brigades". The US Department of Transportation has determined that shortly after 9/11 at one point Transit workers comprised 60% of the Rescue and Recovery force at Ground Zero.

This level of response has come at a terrible price because virtually NONE OF US had respirators. We toiled at the scene for weeks, when the smoke and fires were at their worst. In fact, approximately half of our members who have been screened by The Mount Sinai World Trade Center Clinic have been diagnosed with respiratory disease – including myself. Additionally, about half suffer from either PTSD or depression from their time spent on the pile. Many others suffer from Gastro-Intestinal disorders for the same reason.

So many of us are already ill and we are deeply concerned that the Air Quality around Ground Zero will have even graver long term health implications for those of us who responded in the Rescue and Recovery.

With so much doubt cast on the quality of research and the accuracy of reports submited about the Air Quality at Ground Zero to date, it still falls to governmental bodies to insure that the health of the Rescue and Recovery workers is protected from this point on.

As unbelievable as it may sound, a number of Transit workers who are ill as a result of their work on "the Pile" at Ground Zero have been terminated from their jobs under NY State Code Section 71-73 because they have been unable to return to work These men and women are sick and now have no income and no health coverage. They are not alone – other Union members and area residents are facing the same catastrophe.

Additionally, even Union members who still have health coverage are at risk. When Local 100 sits down to negotiate our next contract with NYC Transit, part of that negotiation will include the cost of health care. Local 100 health benefits costs have ballooned due to our members needs arising from Ground Zero. The added burden of those costs will pose a risk to every other area of our wage and benefit package. These health care costs should not be borne by the rescue workers of Ground Zero or their employers. The attack on the World Trade Center was an attack on this country – as such, this is a federal issue and any short or long term health care costs are the responsibility of the Federal Government.

These and other issues need to be monitored and addressed. I trust that this committee will help do just that. The people of this City have already paid too high a price. Please remember that the front line in this war was and is not just in Afghanistan or Iraq but on West Street!!

Testimony to EPA WTC Expert Technical Review Panel

Borough of Manhattan Community College
April 12, 2004
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Thank you for the opportunity for input into the important task of measuring and remediating the contamination of the WTC environmental disaster. My relevant expertise is in understanding the processes by which burning materials are incinerated and produce pollutants, as well as pollution prevention, incinerator operations and emissions controls. I made large contributions to two chapters of the National Research Council's 2000 report, Health Effects of Waste Incineration.

Arguments Against using Asbestos as a surrogate for all other WTC pollutants

An important issue in these discussions has been whether asbestos should be considered to be a surrogate for the scores of other pollutants in the WTC dusts. First, there were two environmental disasters associated with the WTC attack: 1. the collapses, 2. the fires. The categories of pollutants generated by each were different, and the dispersion mechanisms for each were different. Asbestos came only from the collapses.

It would be wrong to assume that only the collapses produced the dust found inside buildings or HVAC systems. Data from municipal and medical waste incineration and burn barrels (see data below) demonstrate that fly ash and particulate matter are also produced by incomplete combustion of a heterogeneous waste stream containing pollutant precursors. These eventually fall out as contaminated dust. Decades of research has shown that fine carbon and metallic particles from incineration (fly ash) are typically coated with incinerator pollutants such as mercury and other heavy metals, dioxin/furan and other organics, HCl, SO_2, as the flue gases cool in incinerators. But in the case of the WTC, there was likely to have been a synergy between the two environmental events, with fine particulate matter (gypsum, fiberglass, asbestos) from the collapses adding to the carbon particles normally occurring in a fire, serving as additional condensation nuclei for mercury, dioxin, and other metals, organics, and acids, which volatilized in the heat of the fires, then condensed to solid and liquid form as they rose above the site and cooled. As the coated fly ash and particles drifted to cooler areas away from the buoyant effects of the fires, they would begin to fall out, depositing as toxic dust.

It would also be wrong to suggest that the dispersion pattern for asbestos was identical to any other pollutant (and studies by ATSDR, Lioy, and others have shown great variability in WTC dust samples). It is also wrong to assume that the quantity each of the other pollutants is in some single fixed ratio to the quantity of asbestos in all samples. This is not supported in the data. For example, table 6 (the Summary of Locations With Asbestos or Synthetic Vitreous Fibers (SVF) in Settled Surface Dust), as well as Tables 9, 10 and 12 in the "Final Technical Report of the Public Health Investigation to Assess Potential Exposures to Airborne and Settled Surface Dust in Residential Areas of Lower Manhattan" ATSDR shows that there were a number of residences where the dust contained glass fibers, but not asbestos. The ratio between these two pollutants, where both were found, is also inconsistent. Since fiberglass is a contaminant that can cause cancer and scarring of the lungs, it is important that future investigations and cleanups not be designed to miss finding it. Assuming that asbestos is a good surrogate for fiberglass is thus, a dangerously false one.

Another argument against the concept of uniform dispersion of all pollutants is that larger particles fall out closer to the source than finer particles. But the finer particles have a far greater surface area than the larger ones, and can therefore carry more toxics on their surfaces. So the toxics that volatilize in the fires and then condense on fine particles could be found further from the source than larger particles.

Formation of Dioxin from Fires / Dioxin Deposition
Dioxin has a great affinity for particulate (doesn't vaporize) Walter Shaub, 1983.

Primary Dioxin formation occurs from burning of products containing dioxin precursors – a source of lignin (basically compounds containing benzene ring), such as paper, cardboard, wood, plus PVC and other sources of chlorine in the presence of insufficient oxygen and temperature for complete combustion. Intermediate byproducts of incomplete combustion are chlorinated benzenes and chlorinated phenols which serve as direct dioxin precursors. Incomplete combustion (e.g. smoldering conditions of the WTC) favor the formation of toxic, carcinogenic compounds such as these and dioxins and furans.

In the late 1980s, German and Environment Canada research first showed how secondary dioxin formation can occur. In the presence of dioxin precursors and a temperature of about 450°F, a temperature common in smoldering ruins, with volatilized copper and other heavy metals present in flue gases, the formation of dioxin onto the surfaces of particles is catalyzed (increased). This mechanism was found to be responsible for greatly increasing the dioxin emissions of incinerators at the outlet of the air pollution control device vs. at its inlet. Dioxin catalysts were clearly in the mix of pollutants, with copper wiring, lead computers, and many other sources of heavy metals in the buildings.

I published research in the late 1980s that showed that both dioxin and mercury removal efficiency (i.e. condensation onto fine particles) increased in linear fashion towards 100% as the temperature of the flue gases dropped from 450°F towards ambient temperature. Further, my research showed that the presence of alkaline reagents, as injected particulate in dry scrubbers, increased the capture rate for dioxins and mercury onto those fine particles. The WTC disaster produced a perfect scenario for massive, uncontrolled incineration / cremation, and then in the cooling above the pile, amidst fine, alkali particles, condensation of pollutants to form dust coated with toxics.

Combustion of solid waste even in well-designed incinerators, outfitted with special equipment to regulate the availability of oxygen and to maintain a minimum temperature, absolutely require skilled and vigilant operations to minimize the conditions ripe for generation of dioxins. The dioxin emissions standard (at stack height) for municipal incinerators in Europe is 0.13 TEQ ng / dscm (corrected for temperature in the way the U.S. does it). The European standard is used for comparison since the U.S. does not have a dioxin emission standard in TEQ.) Emission standards are devised assuming that emissions disperse two or more orders of magnitude from the time they leave the stack until they reach the ground.

But it was twelve days after 9/11, that EPA took its first dioxin samples around the WTC site. Two sites measured dioxin (in Toxic Equivalents) of significantly more TEQ than this European emission standard, and at ground level perhaps a block or two from the nearest sources of smoldering. There is no indication regarding the wind conditions when these samples were gathered (i.e., was the location upwind, or downwind of the pollutant sources). Logically, shortly after the moments of impact and collapse, the formation of dioxin and adherence to particulate matter would have been far greater than that twelve days later.

Backyard Burn Barrels; Medical waste incineration; Apartment incinerators
Since burn barrels are uncontrolled incineration which has a lot in common with the WTC fires, it is instructive to review some of the literature on burn barrel emissions. Various government publications have shown that backyard burning of garbage produces smoldering conditions and promotes formation of dioxin and furan. They also show that direct inhalation impacts as well as deposition of contaminated particulate can occur in the vicinity of the source of open burning at ground level.

Emissions from medical waste incinerators and crematoria also have a lot in common with the WTC fires, in that over a thousand people were cremated there. Medical waste is typically on the order of 60% normal municipal waste plus wastes more specific to medical offices and hospitals. The following are some quotes from various publications and websites, with my comments italicized.

In 1993, 2200 apartment incinerators were phased out in New York City in a 1989 local law that my efforts inspired, because of the toxic emissions they generated due to archaic designs, inadequate operations, and frequent uncontrolled "upset" conditions which fed back into apartment corridors via the chutes on each floor. The WTC fires produced similar emissions, but on a continuous basis, with no chimney.

From EPA: http://www.epa.gov/seahome/hazwaste/src/household.htm

While burning may destroy some toxic substances, others will become concentrated in the smoke, ash, and sludge resulting from burning wastes. Repeated burning on the same location under similar weather conditions may cause the toxic substances in smoke to accumulate in a concentrated area around the burn barrel.

This supports the idea that the dusts in the WTC vicinity would not only contain toxics from the WTC collapses, but also the fires.

From NYSDEC website: http://www.dec.state.ny.us/website/reg4/pr1.html:

The burning of synthetic compounds like plastics causes the release of dioxins and other potential carcinogens. Burn barrels usually have fires that burn at lower temperatures than large

industrial incinerators. The lower temperature and smoldering fires often found in burn barrels result in harmful fumes released into the air and hazardous materials remaining in the ash.

According to the State Department of Health, some of the toxic chemicals released by burning household trash and their potential dangers include:

- benzene (leukemia)
- toluene diisocyanate (asthma)
- nitrogen oxides (lung damage)
- nitrile compounds (metabolic poisons and carcinogens)

Other toxic compounds released from burning trash may include:

- dioxins and formaldehyde
- hydrochloric acid and sulfuric acid
- hydrogen cyanide
- polycyclic aromatic hydrocarbons
- cadmium, lead, mercury and chromium

People should never burn the following items: plastic, foam cushions, furniture, rugs, floor coverings, appliances, rubber, tires, metals, glass, tree stumps, roots, asphalt shingles, any roofing materials, drywall, insulation, or any pressure treated wood (including deck lumber, railroad ties, and telephone poles treated with chromated copper arsenate, creosote or pentachlorophenol).

From Lake Superior Lakewide Management Plan, April, 2000, Chapter 4
http://www.epa.gov/glnpo/lakesuperior/lamp2000/LS%20chapter%204.pdf

The remaining largest sources of dioxin within the *[Lake Superior]* basin, appear to be burn barrels, wood treatment with pentachlorophenol (PCP) and the disposal of fly ash from the incineration of medical wastes. (pp. 13-14). Data from 1999 study in Lake Superior district showed sources of dioxin as coming primarily from medical waste incineration and burn barrels. Out of a total of 90.2 g TEQ/year, 83 g was from medical waste incinerators and about 7 g was from burn barrels – essentially the total source of dioxins. (Page 4A-11)

The burning at Ground Zero was quite similar in many respects to backyard burn barrels, which have been banned in New York State, Michigan and other places. Medical wastes (including human body parts, chlorinated plastics, fabrics, batteries containing heavy metals such as mercury, nickel, cadmium and others) are not that dissimilar from materials available at the World Trade Center. Fly ash from incineration of the WTC materials would therefore be one constituent of the dusts that were deposited in peoples' homes and businesses as well as of the plume (which would have consisted of particulate matter otherwise referred to as fly ash in incinerators).

Table A.3.3 summarizes dioxin generation emission factors for several recent studies. The table illustrates that emission rate estimates vary over several orders of magnitude. As a result, these emission factor estimates are provided to illustrate the potential significance of the source. Much additional work remains to be completed to properly estimate the dioxin emissions from household waste burning that is occurring in the basin.

Table A.3.3 Emission Factors for Household Waste Combustion in Burn Barrels

Source	Emission Factor(g TCDD/lb household waste burned)
Cohen (1999)	3.6×10^{-8} [b]
Lemieux (1998) (recycler)[a]	1.04×10^{-7}
Lemieux (1998) (non-recycler	7.4×10^{-6}
Two Rivers Regional Council (1994)	6.2×10^{-10}
WLSSD (1992)	1.8×10^{-9}

[a] Recyclers were assumed to reduce the proportion of newspaper, plastic, and some metals in their household waste.
[b] Expressed as grams TEQ/yr.

(Page 4A-14)

Normalized for Superior district population, 4.5 million pounds (2250 tons) of waste produces about 7 g TEQ dioxins.

Adding up all the paper, cardboard, books, wood furniture, plastics, textiles, fabrics, carpets, and bodies in the seven WTC buildings, it is conceivable that the magnitude of the WTC dioxin-precursor waste burned and that of the Superior district studied might be similar.

From EPA: http://www.epa.gov/seahome/hazwaste/src/burn.htm

Researchers estimate that ground-level concentrations of dioxin resulting from burning household trash in a burn barrel are 7000 times the amount formed when trash is burned in a municipal incinerator. Ash and sludge resulting from on-farm burning also contain significant amounts of toxic substances.

The temperatures generated at typical burning sites, burn barrels, and domestic incinerators is not adequate to eliminate the production of toxic substances.

EPA Evaluation of Emissions from the open burning of household waste in Barrels: http://www.epa.gov/ttnatw01/burn/barlbrn1.pdf Pp 61-66.

It may be useful to compare emissions from open burning of household waste to emissions from a full-scale municipal waste combustor (MWC) unit operating with good combustion and flue gas cleaning technology. Based on data from a field test at an MWC22, and averaging the "Normal Good" PT-08, PT-09, and PT-11 test conditions from reference 22, using the samples taken at the pollution control device outlet, the data in Table 4-1 *(below)* were generated. For the

results from this study, concentrations of all target VOCs were summed to give total VOC emissions (concentrations below detection limit were set at zero). A similar treatment was taken for PAHs, chlorobenzenes (CBs), PCDDs/PCDFs and PCBs.

When plotted as a bar graph as shown in Figure 4-1, it is readily apparent that even the significant differences between the avid recycler and non-recycler's emissions are minor in comparison to the difference between open burning of household waste and the controlled combustion of municipal waste at a dedicated municipal waste combustor facility. Note that … emissions from open burning can be several orders of magnitude higher than controlled combustion.

Table 4-1. Comparison between open burning of household waste and controlled combustion of municipal waste in a municipal waste combustor; all emissions are in □g/kg waste burned.

	Avid Recycler	Non-Recycler	MWC
PCDD	46.7	38.25	0.0016
PCDF	222.9	6.05	0.0019
CBs	1007.5	424.2	1.16
PAHs	23974.7	66035.65	16.58
VOCs	2052500	4277500	1.17

Emissions from backyard burning of residential solid waste are released at ground level resulting in decreased dilution by dispersion. This could potentially exacerbate the potential impacts beyond what is apparent from the magnitude of the emissions alone. The large magnitude of the emissions, coupled with the concentration of these emissions in the local neighborhoods due to poor dispersions, will lead to increased direct inhalation exposure.

The EPA 1994 Draft Dioxin Reassessment document attempted to conduct a mass balance for dioxin emissions in the United States and identified a significant gap between current deposition estimates and emission estimates. The deposition estimates were considerably higher than the emissions estimates. The EPA speculated that this indicated that there were unknown dioxin emission sources. The dioxin emissions from burn barrels may be a missing link to help account for the gap between measured deposition rates and the emissions inventories. Page 64

What goes up comes down (as deposition). As poor incineration has always been the highest category of dioxin emissions, WTC would have been an enormous concentrated source of dioxin at ground level.

Table 4-4. Summary of all test data

Parameter Average, per mass lost Average, per household

WASTE COMPOSITION	Recycler	Non-Recycler	Ratio
Total daily waste (kg)	1.5	4.9	0.31
PVC in waste (kg)	0.07	0.01	7.00
Paper waste (kg)	0.98	3.02	0.32
All plastics (kg)	0.23	0.36	0.64
Food (kg)	0	0.28	0.00
textile, leather (kg)	0	0.18	0.00
Wood (kg)	0.06	0.05	1.20
glass/ceramics (kg)	0.1	0.5	0.20
Metals (kg)	0.14	0.49	0.29

COMBUSTION RESULTS	Recycler	Non-Recycler	Ratio
max.bed temp. (□C)	370	740	0.50
Fraction burned (%)	66.7	49.1	1.36
Unburned residue (kg)	0.50	2.49	0.20

AIR CONTAMINANT EMISSIONS (mg/kg burned)	Recycler	Non-Recycler	Ratio
Benzene	725	1240	0.58
Acetone	190	940	0.20
styrene	310	740	0.42
Total TICs	4000	14400	0.28
naphthalene	40	48	0.83
phenol	85	140	0.61
dichlorobenzenes	0.320	0.160	2.00
trichlorobenzenes	0.400	0.110	3.64
tetrachlorobenzenes	0.140	0.074	1.89
pentachlorobenzene	0.100	0.053	1.89
hexachlorobenzene	0.048	0.022	2.18
acenaphthylene	3.4	11	0.31
naphthalene	5.2	18	0.29
phenanthrene	3.3	7.3	0.45
Aldehydes & ketones	140	2800	0.05
Total PCDD	0.047	0.038	1.24
Total PCDF	0.22	0.0061	36
Total PCB	2.86	0.34	0.97
PM10	5800	19000	0.31
PM2.5	5.3	17.4	0.30
HCl	2400	284	8.47
HCN	200	468	0.43

RESIDUALS IN ASH	□g (or ng) per kg ash		
PCDD, ng/kg;	14851	1556	9.54
PCDF, ng/kg;	34040	5800	5.87
PCB, □g/kg	220	122	1.80
Cr	300	92	3.26
Cu	4910	343	14
Pb	164	32	5.13
Zn	11500	721	16

The above data show the degree to which dioxins, PCBs and some heavy metals are left in bottom ash after waste is burned in a burn barrel. Under conditions on the WTC pile, these could become airborne whenever the wind picked up, and during transfer operations at the barge near Stuyvesant High School and at Fresh Kills.

Page 66

From Michigan DEQ brochure on burn barrels
http://www.deq.state.mi.us/documents/deq-aqd-bhw.pdf

When the amount of chemicals emitted from a barrel burn is compared to what is emitted from a municipal waste combustor (MWC) it becomes obvious how much dirtier the smoke is from a burn barrel than a MWC. Pound for pound of garbage burned:
□A burn barrel emits 10,000 times more total dioxin than a MWC.
□A burn barrel emits 1000 times more total furans than a MWC.
□A burn barrel emits 3000 times more polycyclic aromatic hydrocarbons than a MWC.

Pollutants released from burning waste in a burn barrel are transported through the air either short or long distances, and are then deposited onto land or into bodies of water. A few of these pollutants such as mercury, polychlorinated biphenyls (PCBs), dioxins and furans persist for long periods of time in the environment.

Burning household waste is unhealthy
Smoke from burning household waste is unhealthy to breathe. Small children, pregnant women, older adults and people with asthma or other respiratory ailments are especially sensitive to its effects.

- Smoke from burn barrels can contain hydrochloric acid as well as formaldehyde and other aldehydes. These chemicals are especially irritating to the eyes and lungs.
- Bleached paper products, lightweight white cardboard, and certain plastics contain chlorine which create dioxins when burned with other trash at low temperatures. Exposure to dioxins is associated with cancer, birth defects and altered immune function.
- Burning slick colored papers and cardboard printed with synthetic inks releases heavy metals into the atmosphere. The absorption of heavy metals by humans has been linked to birth defects and cancer.

- . The burning of polystyrene polymers - such as foam cups, meat trays, egg containers, yogurt and deli containers - releases styrene. Styrene gas can readily be absorbed through the skin and lungs. At high levels styrene vapor can damage the eyes and mucous membranes. Long term exposure to styrene can affect the central nervous system, causing headaches, fatigue, weakness, and depression.

Mercury

As is the case for dioxins and furans, the state-of-the art method for capturing mercury in emissions from incinerators is reduction in temperature and use of a scrubber / baghouse (filter). Close to 100% capture rates can be achieved when temperatures are reduced to 100 degrees, and particularly in the presence of calcium carbonate or other alkaline reagents. Conditions were good in the vicinity of the WTC pile, whereby mercury escaping from the numerous sources in the pile (everything from dental amalgams to automobile switches to fluorescent lights, thermostats, latex paint, and batteries) would coat surfaces of particulate matter, eventually falling out as toxic dust.

Lake Superior LaMP: 2002 Progress report
Section 3: Critical Pollutants
http://www.epa.gov/glnpo/lakesuperior/Lake%20Superior%20Part%20B.pdf

"Consumer and commercial products have been significant sources of mercury. Mercury containing products can include thermometers, switches, dental amalgams, thermostats, button batteries, and fluorescent lamps. Industrial raw materials can also contain unwanted mercury. The elimination of mercury from latex paints and batteries was a significant pollution prevention success of the manufacturing sector in the 1990s." (Page 3)

But the WTC was built in the early 1970s and the inside offices were painted numerous times, likely with mercury-based latex paint.

Conventional fluorescent lamps are the most commonly used light source in commercial and consumer lighting and close to 600 million fluorescent lamps are disposed of annually in North America. As each bulb contains between 9 and 40 milligrams of mercury, used bulbs contribute significant quantities of this toxic substance to the environment. Page 19.

Lake Superior Lakewide Management Plan, 2000
http://www.epa.gov/glnpo/lakesuperior/lamp2000/LS%20chapter%204.pdf

Mercury in products which are disposed in landfills may be eventually released to the environment through volatilization. At the 5th International Conference on Mercury as a Global Pollutant in 1999, two researchers independently estimated that an average of 15 percent of the mercury contained in products is released during the disposal process (Andrews and Swain 1999,

and Kindbom and Munthe 1999). Therefore, 15 percent of the potential release of mercury is re-emitted. (Page 4-18)

A large amount of mercury remained in the dusts in the vicinity of ground zero due to the enormity of the source and the mechanism for condensation and deposition. The mercury in these dusts do volatilize slowly, presenting a continuing source in places, such as HVAC systems and poorly cleaned indoor spaces, where it accumulated and has not been removed.

Lake Superior Lakewide Management Plan, 2000
http://www.epa.gov/glnpo/lakesuperior/lamp2000/LS%20chapter%204.pdf
Page 4A-4

Cremation: The 1999 estimate was determined by calculating what percentage the basin population [425,548] (Tetra Tech Inc. 1996) is of the total Michigan, Minnesota, and Wisconsin 1998 population [19,766,161] (U.S. Census 1998). This percentage (2.15 percent) was multiplied by the number of total projected cremations in Michigan, Minnesota, and Wisconsin for 2000 [46,569] (EPA 1997) to obtain the total number of cremations in the basin.

The number of cremated bodies [1,002.6] was multiplied by the emission factor of 1.50E-03 kg/body for cremation (EPA 1997).

_ 425,548/19,766,161 = 2.15 percent
_ .0215 * 46,569 = 1,002.6
_ 1,002.6 bodies/yr * 1.50E-03 kg mercury/body = 1.50375 kg mercury/yr

It can be argued that roughly this number of people or more were cremated at the WTC site, as this many of the bodies of victims were never found. The cremation of these bodies would have produced 1.5 kg of mercury according to these calculations.

Lake Superior Lakewide Management Plan, 2000
http://www.epa.gov/glnpo/lakesuperior/lamp2000/LS%20chapter%204.pdf
Page 4A-5

The 1999 estimates are based on a population extrapolation and Minnesota mercury emission estimates from fluorescent lamp breakage for 2000 [9.07 kg/yr], which are based on the proportion of lamps not recycled and industry figures on mg/lamp (MPCA 1999).

It should be possible to estimate the number of fluorescent bulbs, batteries, switches and other sources of mercury at the WTC buildings.

Conclusions

Numerous carcinogenic substances and their precursors were present and burned under condition of low oxygen and insufficient temperature to achieve complete combustion (i.e. smoldering) in the presence of dioxin catalysts. This set up the perfect conditions for maximum generation of dioxin/furan. There was a tremendous amount of mercury in products in the WTC. The presence of tremendous numbers of particles (alkaline and otherwise) provided the perfect scenario for dioxins, mercury, and other toxics to coat and accumulate in the dusts. As these conditions (low temperature, low oxygen, presence of precursors and catalysts) vary over time and space, the generation of dioxin / furan and other related toxics also varies. Therefore, some locations are likely to have larger accumulations of these pollutants than others.

An important question to answer is whether this is purely an exercise simply to see if a previous sampling and cleaning experiment was successful in the limited area in which it took place, or whether the purpose is to identify the extent of any hazardous conditions that still exist, and to which people are still being exposed, so that a complete remediation program can be designed and executed. The purpose of the Environmental Protection Agency should be to accurately characterize the toxic burden at locations inside and outside the study area, in any areas where the plume traveled in the first 100 days after 9/11, and if toxics are found, to remediate as if it were a Superfund site (since the dusts were similar to those in some Superfund sites – e.g. Libby, Montana). Turning a blind eye to contamination that is likely to still exist in the 4/5 of apartments below Canal Street, the many businesses that did not receive proper remediation, and those outside the arbitrary boundary, is contrary to EPA's prime mission, to protect the environment and health of citizens.